

WHAT IS CLAIMED IS

1. A device for treating a fuel/coolant mixture in a direct methanol fuel cell system, the device comprising:

a circuit system including at least one mixture conveying device, and an anode chamber of a fuel cell of the fuel cell system, and at least one cation exchanger, wherein the fuel/coolant mixture at least partially circulates in said circuit system;

a tank for holding the fuel; and

a line for feeding the fuel into the circuit system, said line included a combined anion and cation exchanger.

2. The device according to Claim 1, wherein the cation exchanger is arranged in a bypass which runs parallel to a principal stream of the circuit, the principal stream and the bypass being combined again, downstream of the cation exchanger as seen in the direction of flow, by means of a controllable or regulateable valve device.

3. The device according to Claim 1, wherein a separate anion exchanger is additionally arranged in a bypass which runs parallel to a principal stream of the circuit, the principal stream and the bypass being combined again, downstream of the cation exchanger and the separate anion exchanger as seen in the direction of flow, by means of a controllable or regulateable

valve device.

4. The device according to Claim 2, wherein the valve device is controlled or regulated as a function of a temperature of the fuel/coolant mixture.

5. The device according to Claim 1, wherein a cooling heat exchanger is arranged in the circuit, upstream of the cation exchanger as seen in the direction of flow.

6. The device according to one of Claim 1, wherein a heating heat exchanger is arranged downstream of the cation exchanger as seen in the direction of flow.

7. The device according to Claim 1, wherein in the cation exchanger is designed as an electro-deionization (EDI) system, as a capacitive deionization (LDI) system or as at least one resin bed ion exchanger.

8. The device according to Claim 1, wherein the combined anion and cation exchanger is designed as a mixed bed ion exchanger, as a capacitive deionization system or as an electrodeionization system.

9. The device according to Claim 1, wherein the combined anion

and cation exchanger has at least one resin bed ion exchanger, which is designed as a cation exchanger, and at least one resin bed ion exchanger, which is designed as an anion exchanger.

10. The device according to Claim 2, wherein a cooling heat exchanger is arranged in the circuit, upstream of the separate ion exchanger as seen in the direction of flow.

11. The device according to Claim 2, wherein a heating heat exchanger is ranged downstream of the separate ion exchanger as seen in the direction of flow.

12. The device according to Claim 2, wherein the separate ion exchanger is designed as an electro-deionization system, as a capacitive deionization system or as at least one resin bed ion exchanger.

13. An arrangement for treating a fuel/coolant mixture in a fuel cell system comprising:

- at least one mixture-conveying device;

- an anode chamber of a fuel cell of the fuel cell system;

- at least one cation exchanger;

- a tank for holding the fuel and a line for feeding the fuel into the at least one mixture-conveying device;

- a combined anion and cation exchanger connected in said

line.

14. An arrangement according to Claim 13, further comprising a separate anion exchanger arranged in a bypass which runs parallel through a principle stream of a circuit formed by said at least one mixture conveying device and said anode chamber wherein said principle stream and said bypass are combined downstream of one of the cation ion exchanger and the separate an anion exchanger as seen in the direction of flow by means of a controllable valve device.

15. The arrangement according to Claim 13, wherein a cooling heat exchanger is arranged upstream of the cation exchange as seen in the direction of flow.

16. The arrangement according to Claim 13, further comprising a heating heat exchanger arranged downstream of the cation exchanger as seen in the direction of flow.

17. The arrangement according to Claim 13, wherein the cation exchanger is arranged in a bypass which runs parallel to a principle stream of a circuit formed by said at least one mixture-conveying device and said anode chamber wherein the principle stream and the bypass are combined downstream of the cation exchanger as seen in the direction of flow, by means of

